EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview

with Thomas Langer (Registration Number: 27,264) on February 26 2010.

The claims have been amended as follows (Replaces claim amendments filed on

December 04 2009):

1. An iterative decoding and equalizing device for high bit rate

communication over frequency-selective channels with multiple transmit and

receive antennas, said device comprising:

a decision feedback equalizer adapted to receive data from different

receive antennas and including:

a forward filter, and

a recursive backward filter fed with calculated weighted

reconstituted data from an output of a channel decoder with weighted

inputs and outputs fed by decision means; and an output of a weighted

data reconstitution processing unit,

the weighted data reconstitution processing unit fed with an output

of a channel decoder; and

~~subtraction means~~ a subtractor for subtracting an output of ~~said~~ the

recursive backward filter from ~~the~~ an output of the forward filter to output

subtracted data,

wherein the subtracted data is fed to ~~an input of the~~ decision means along

with the output of the channel decoder,

wherein the decision means produce a statistic which is forwarded to the

channel decoder,

wherein ~~said~~ the decision means take into account space noise correlation

at ~~an output of the subtraction means~~ the subtracted data of the subtractor,

wherein the decision means and the channel decoder are separated by

space-time de-interleaving at a binary level, and

wherein the forward filter and ~~said~~ the recursive backward filter are

iteratively adapted minimizing a mean square error at the output of the

subtraction means.

2. The device according to claim 1, wherein the decision means ~~at the~~

~~output of the subtraction means of the decision feedback equalizer are of~~ is a

space whitening type and include a sphere decoder.

3. The device according to claim 1, wherein the decision means ~~at the~~

~~output of the subtraction means of the decision feedback equalizer are of the~~

~~serial and/or parallel type~~ is Serial Interference Cancellation~~/~~ (SIC) or Parallel

Interference Cancellation (SIC/PIC) (PIC) type adapted to cancel residual space

interference at the subtracted data of the subtractor output of the subtraction

means of the decision feedback equalizer.

4-6. (Canceled)

9. (Canceled)

16. An iterative equalization and decoding method for high bit rate

communication over frequency-selective channels with multiple transmit and

receive antennas, comprising:

a step of decision feedback equalizing of data received from the receive

antennas; and , wherein the step of decision feedback equalizing comprises:

a step of decoding with the aid of a channel decoder with weighted input

and output wherein said decision feedback equalizing step comprises:

a step of filtering said received data by a forward filter;

a step of filtering weighted reconstruction of the data calculated on the

basis of data a an output of said channel decoder by a backward filter;

a step of subtracting an output of said backward filter from data at an

output of said forward filter to output subtracted data; and

a step of detecting applied to the subtracted data obtained following the

subtracting step and to the data at the output of said channel decoder, said

~~detecting step taking into account spatial correlation of an error of said decision~~

~~feedback equalizing step obtained as output from said subtracting step and~~

~~generating a statistic transmitted to the channel decoder after a step of spatio-~~

~~temporal interleaving at binary lever,~~

~~wherein the forward and backward filters are configured in an iterative~~

~~manner to minimize a mean square error obtained following the subtracting step~~

a step of filtering the data received from the receive antennas by a

forward filter,

a step of filtering a weighted reconstitution data from a weighted

data reconstitution processing unit by a recursive backward filter,

a step of calculating the weighted reconstitution data from an output

of a channel decoder by the weighted data reconstitution processing unit;

a step of subtracting an output of recursive backward filter from an output

of the forward filter to output an subtracted data; and

a step of detecting applied to the subtracted data obtained following the

subtracting step and to the output of the channel decoder,

wherein the detecting step taking into account spatial noise correlation of

an error of the decision feedback equalizing step obtained as output from the

subtracting step and generating a statistic which is forwarded to the channel

decoder after a step of space-temporal de-interleaving at a binary level,

wherein the forward and recursive backward filters are configured in an

iterative manner to minimize a mean square error obtained following the

<u>subtracting step.</u>

17. (Canceled) (duplicating claim 16)

18. The method according to claim 16, further comprising:

a step of whitening ~~said~~ <u>the</u> error <u>of the decision feedback equalizer</u>

obtained as output from ~~said~~ <u>the</u> subtracting step.

19. The method according to claim 16, wherein ~~said~~ <u>the</u> detecting step

implements a sphere decoding algorithm.

20. The method according to claim 16, wherein~~, in said~~ <u>the</u> step of filtering

~~said received data~~ <u>the data received from the receive antennas</u> by the forward

filter, starting from a certain iteration, the forward filter is an adapted filter.

2.   The following is an examiner's statement of reasons for allowance:

Claims 1 and 16 are allowed because a search of the prior art failed to teach, as

applicants have, a method and apparatus for iterative decoding and equalizing device

for high bit rate communication over frequency selective channels with multiple transmit

and receive antennas comprising the decision feedback equalizer including the forward

filter and the recursive backward filter filtering output of the channel decoder through

weighted data reconstitution processing unit, the subtractor subtracting output from the recursive backward filter from output of the forward filter, and the decision means producing statistics forwarded to the channel decoder by taking space noise correlation from output of the subtractor and output of the channel decoder. The closes art presented were U.S. PGPub. 20040196935 (Nieto) but fail to teach the decision means producing statistics forwarded to the channel decoder by taking space noise correlation from output of the subtractor and output of the channel decoder to further cancel (equalize) residual space interference at the output of the subtractor.

For claims 2, 3, 7, 8, and 18-20, they depend on claims 1 and 16, respectively and therefore are considered allowable on the basis as the independent claim as well as for the further limitations set forth.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUNG AHN whose telephone number is (571)270-3706. The examiner can normally be reached on Monday-Friday, 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571)272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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